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A NEW SPECIES OF *CARDAMINE* (BRASSICACEAE) FROM SOUTH-CENTRAL TEXAS

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ABSTRACT

A novel taxon, **Cardamine carrii** B.L.Turner, sp. nov., is described from the Edwards Plateau of south-central Texas (Uvalde and Kinney counties). It appears to belong to the *C. auriculata* complex (sensu Rollins 1940, 1993), having the fractiflex capitulescences of that assemblage, within which it most resembles *C. macrocarpa,* a species of trans-Pecos Texas and Coahuila.

KEY WORDS: *Cardamine macrocarpa*, Brassicaceae, Texas, Kinney County, Uvalde County, Kickapoo Cavern State Park

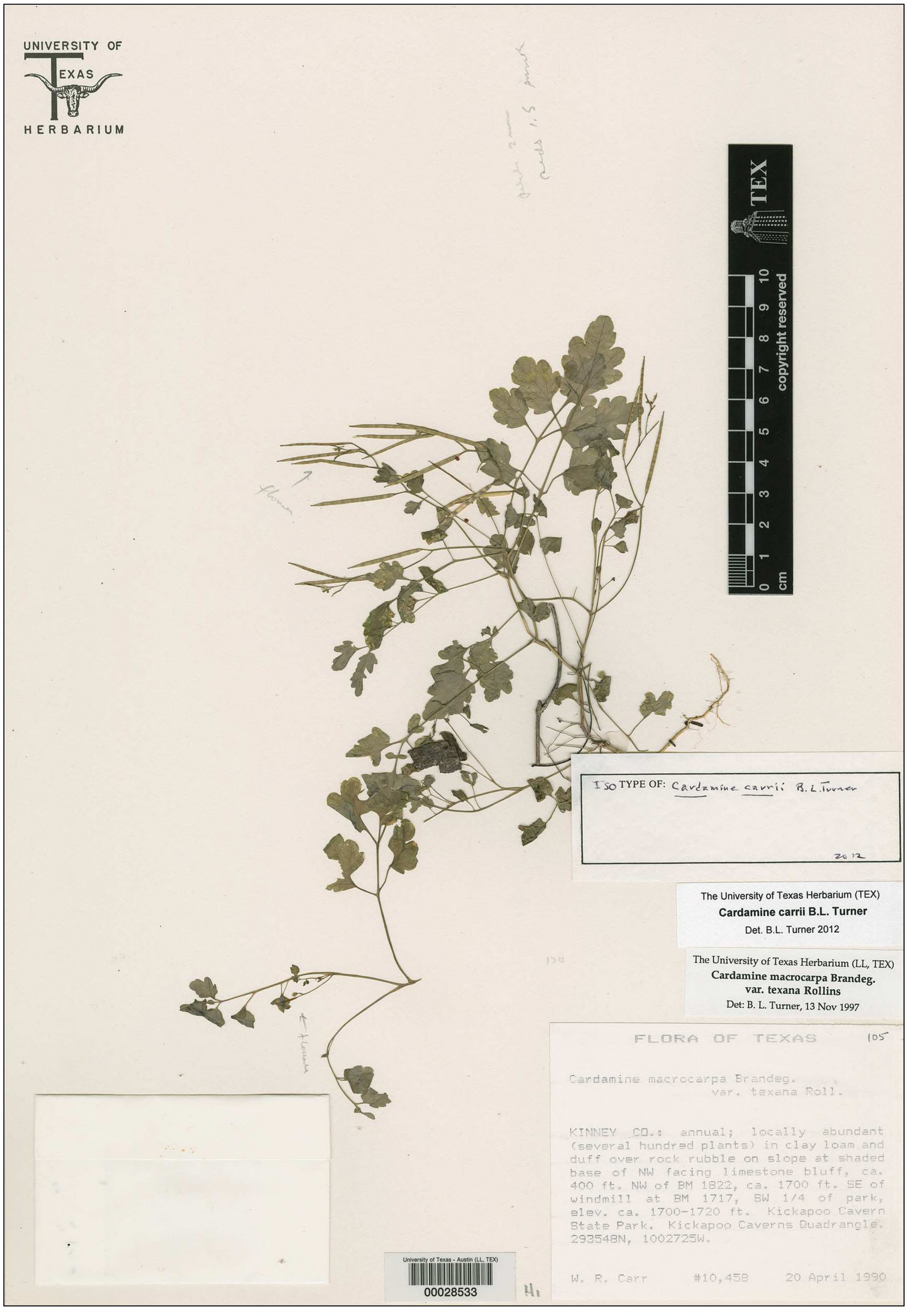
Identification of new collections of various taxa, especially in attempts to keep up-to-date my Atlas of Texas Plants (Turner et al. 2003), has occasioned the present paper.

CARDAMINE CARRII B.L. Turner, sp. nov. Fig 1. **TYPE: USA. Texas.** Kinney Co.: Kickapoo Cavern State Park, ca. 400 ft NW of BM 1822, ca. 1700 ft SE of windmill at BM 1717, SW ¼ of park, 29° 35' 48" N, 100° 27' 25" W, clay loam and duff over rock rubble on slope at shaded base of NW-facing limestone bluff, 1700-1720 ft, 20 Apr 1990, *W.R. Carr 10,458* (holotype: TEX; isotype TEX).

Annual herbs, glabrous, 10–20 cm high. **Taproots** slender, delicate. **Basal leaves** glabrous, mostly 3–6 cm long, not persisting; petioles 2–4 cm long; segments broadly ovate in outline, the terminal segment mostly 1.5–2.0 cm long, and as wide, 3-nervate from the very base, their margins irregularly lobate. **Cauline leaves** mostly 3–8, 5–8-foliate, 6–10 cm long, 4–5 cm wide; petioles 3–4 cm long. **Inflorescence** mostly a weakly ebracteate, divaricately branched, terminal raceme 6–10 cm long. **Sepals** 4, lanceolate, glabrous, ca 2 mm long, 0.5 mm wide. **Petals** 4, white, linear, ca 2 mm long, 0.5 mm wide. **Stamens** 6 (4 long, 2 short); filaments (longer) ca 2 mm long, their anthers ca 0.75 mm long. **Capsules** glabrous, 3–4 cm long, 1.0–1.5 mm wide; pedicels 3–5 mm long. **Seeds** 20–25 per capsule, ovoid, tan, minutely rugose, ca 1.5 mm long, 1.0 mm wide.

Additional specimens examined. **USA. Texas.** Kinney Co.: Kickapoo Cavern State Park, E facing limestone slope in Pine Canyon, ca 2800 ft E of BM 1914 near S boundary of park, locally common, with *Poa bigelovii* and *Parietaria obtusa* in shallow clay loam and leaf litter under guajillo and pinyon pine, ca 1840 ft, 19 Apr 1990, *Carr 10,445* (TEX). Uvalde Co.: ca. 1.7 airmiles W of FM 2690 bridge, on the Annandale Ranch, 29° 26' 49" N, 99° 41' 33" W, 1260-1270 ft, 9 Apr 1997, *Carr 16050* (TEX); 3.4 airmiles S of low water crossing at Concan, 2.2 airmiles W to WSW of jct. FM 2759 and State Rte. 127, 29° 26' 48.4" N, 99° 41' 57.2" W, 1260 ft, 11 Apr 2007, *Carr 25737* (TEX); 0.2 mi past the entrance to the Wittig Ranch on the left side of road, 2 Feb 1987, *Wittig 7509* (TEX).

The species is named for the exceptional Texas botanist, William [Bill] R. Carr, well known for his carefully assembled specimens from throughout the state, including four of the five known collections of the new species.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ISO TYPE OF: Cardamine carrii B.L. Turner
2012
The University of Texas Herbarium (TEX)
Cardamine carrii B.L. Turner
Det. B.L. Turner 2012
The University of Texas Herbarium (LL, TEX)
Cardamine macrocarpa Brandeg.
var. texana Rollins
Det: B. L. Turner, 13 Nov 1997
FLORA OF TEXAS
Cardamine macrocarpa Brandeg.
var. texana Roll.
KINNEY CO.: annual; locally abundant (several hundred plants) in clay loam and duff over rock rubble on slope at shaded base of NW facing limestone bluff, ca. 400 ft. NW of BM 1822, ca. 1700 ft. SE of windmill at BM 1717, SW 1/4 of park, elev. ca. 1700-1720 ft. Kickapoo Cavern State Park. Kickapoo Caverns Quadrangle. 293548N, 1002725W.
W. R. Carr #10,458 20 April 1990
University of Texas - Austin (LL, TEX)
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Figure 1. *Cardamine carrii* (isotype, TEX).

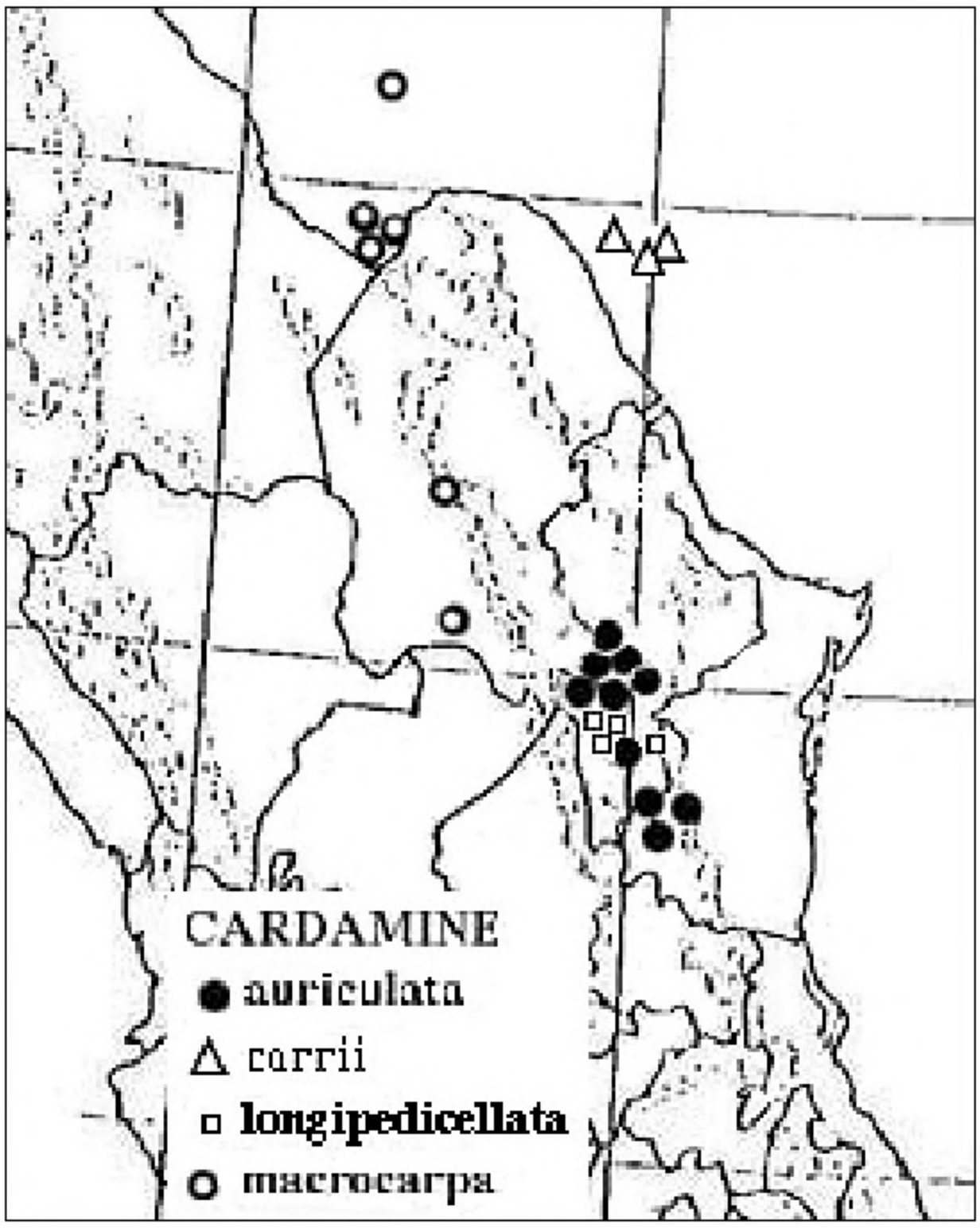

Figure 2. Distribution of the *Cardamine auriculata* complex.

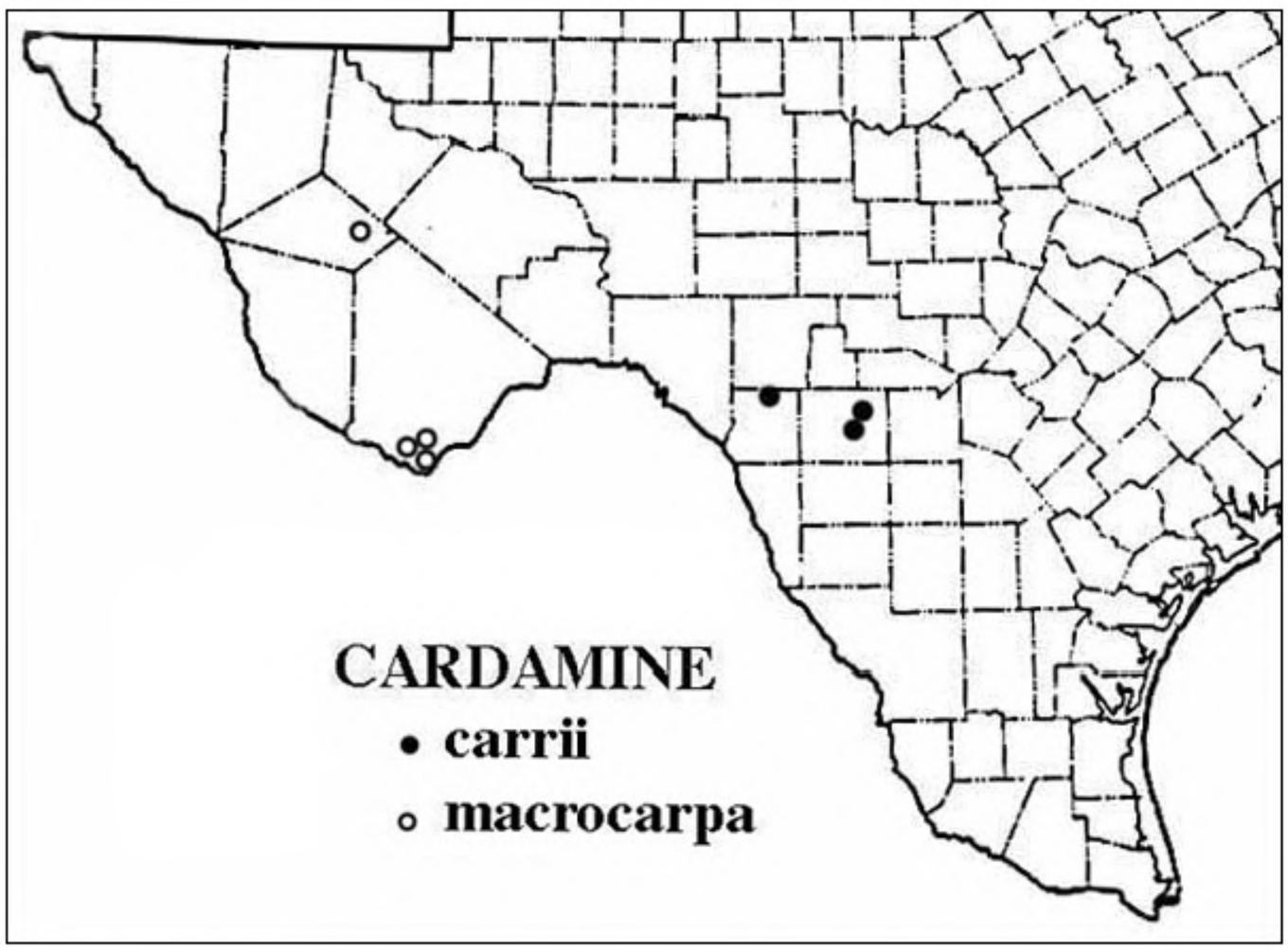

Figure 3. Distribution of *Cardamine carrii* and *C. macrocarpa* in Texas.

Cardamine carrii presumably belongs to the *C. auriculata* complex of species (Fig. 3), all of which have fractiflex branching (sensu Rollins 1940). The following key to the complex should serve to identify the novelty:

1. Terminal leaflet much larger than the lateral leaflets; stems hirsute with trichomes 1–2 mm long ..... **Cardamine mexicana**
1. Terminal leaflet about equal to the lateral leaflets; stems glabrous, or nearly so.

2. Petals emarginate; pedicels 1–2 cm long ..... **Cardamine longipedicellata**
2. Petals entire, not emarginate; pedicels less than 1 cm long.

3. Petals strap-shaped, 5–8 mm long, ca 1 mm wide; siliques ca 1.5 mm wide; pedicels 5–8 mm long ..... **Cardamine macrocarpa**
3. Petals linear, ca 2 mm long, 0.5 mm wide; siliques 1.0–1.4 mm wide; pedicels 3–5 mm long ..... **Cardamine carrii**

Previous botanistis, including Rollins (1993) and Turner et al. (2003), have identified *Cardamine carrii* as *C. macrocarpa* Brandegee var. *texana* Rollins (the type from Brewster Co., Texas). Al-Shehbaz et al. (2010) noted that "The characters by which var. *texana* is said to differ from var. *macrocarpa* are artificially drawn, and the style length, presence or absence of indumentum on the pedicels, and degree of flexuosity of the raceme rachises do not correlate and can vary within a given area. For these reasons, we do not recognize infraspecific taxa in *Cardamine macrocarpa*."

Al-Shehbaz et al. (2010) also noted that in the USA "*Cardamine macrocarpa* is known from the Chisos Mountains, Brewster County." A recent collection of the taxon, however, presumably not examined by the authors, has been collected from eastern Jeff Davis County, as indicated in Figure 2.

> Jeff Davis Co.: on Nations Ranch, ca. 0.8–1.0 airmiles SSW of summit of Bear Cave Mountain, rare in gravel and on rock outcrops ... rhyolite canyon at NE tip of Bear Mountain, ca. 5600-6000 ft, 31 Aug 1997, *Carr 1492* (TEX).

Branching of the inflorescence of *Cardamine carrii* in early flower is not as fractiflex as occurs in *C. macrocarpa*, but more aged racemes are often considerably so (e.g., *Carr 10445, 10458*). At least one reviewer of the present paper suggested that the novelty might best be treated as but a variety of *C. macrocarpa*, but the distinctions of *C. carrii* from the latter are as distinct as those of yet other specific taxa of the *C. auriculata* complex, and I find no suggestion that the two taxa intergrade, much less grow together. In short, *C.carrii* is easily recognized by its distinctive foliage (larger leaves with fewer broader segments), fruits (slender, on short pedicels) and flowers (very small, the petals ca 2 mm long), and the distinctive soil and habitat of the Edwards Plateau.

So far as known, Al-Shehbaz et al. (2010) did not examine material of *Cardamine carrii*, none of the sheets on file at TEX having been annotated by the workers concerned.

Cardamine carrii is unlikely to be a weedy or introduced taxon (as the possibility occurred to me in my ignorance of the genus as a whole), since it occurs in natural habitats in association with the rare pine tree, *Pinus remota* (Little) Bailey & Hawksworth [Texas pinyon]. As noted by Little (1966), "the pinyons of Edwards Plateau [Edwards and Kinney counties] are relics of a more widespread pinyon-juniper woodland" dating back to Pleistocene times, and perhaps earlier. In the company of Jana Kos, I attempted to locate the novelty anew, but was unable to, largely because of its apparent rarity and my inability to negotiate the terrain sampled by Carr. Nevertheless, it was obvious from our field observations that *C. carrii* was nearly always associated with *Pinus remota* or its habitat.

ACKNOWLEDGEMENTS

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LITERATURE CITED

Al-Shehbaz, I.A., K. Marhold, and J. Lihová. 2010. *Cardamine*. Pp. 464–484, in Flora of North America North of Mexico, Vol. 7. Oxford Univ. Press, New York and Oxford.

Little, E.L. 1966. A new pinyon variety from Texas. Wrightia 3: 181–187.

Rollins, R.C. 1940. Notes on some crucifers of Texas, Mexico and South America. J. Arnold. Arb. 21: 392–394.

Rollins, R.C. 1993. The Cruciferae of Continental North America. Stanford Univ. Press, Stanford, California.

Turner, B.L., H. Nichols, G. Denny, and O. Doron. 2003. Atlas of the Vascular Plants of Texas. Vol. I–Dicots. Sida, Bot. Misc. 24.